Exploring Aeronautics			
2003 Mathematics			
Academic Content Standards			
Ohio Mathematics			
Grade 5			
Activity/Lesson	**State**	**Standards**	
Fundamentals of Aeronautics (145-176)	OH	MA.5.2.A.1	Identify and select appropriate units to measure angles; i.e., degrees.
Fundamentals of Aeronautics (145-176)	OH	MA.5.5.A.1	Read, construct and interpret frequency tables, circle graphs and line graphs.
Fundamentals of Aeronautics (145-176)	OH	MA.5.5.B	Interpret data by looking for patterns and relationships, draw and justify conclusions, and answer related questions.
Fundamentals of Aeronautics (145-176)	OH	MA.5.5.C.5	Modify initial conclusions, propose and justify new interpretations and predictions as additional data are collected.
Fundamentals of Aeronautics (145-176)	OH	MA.5.5.E.4	Determine appropriate data to be collected to answer questions posed by students or teacher, collect and display data, and clearly communicate findings.
Fundamentals of Aeronautics (145-176)	OH	MA.5.5.G	Evaluate conjectures and predictions based upon data presented in tables and graphs, and identify misuses of statistical data and displays.
Wings(177-208)	OH	MA.5.2.G.3	Demonstrate and describe the differences between covering the faces (surface area) and filling the interior (volume) of three-dimensional objects.
Airplane Control(209-256)	OH	MA.5.3.A.2	Use standard language to describe line, segment, ray, angle, skew, parallel and perpendicular.
Tools of Aeronautics(257-326)	OH	MA.5.4.A.2	Use calculators or computers to develop patterns, and generalize them using tables and graphs.
Science of Flight	OH	MA.5.4.K.5	Model problems with physical materials and visual representations, and use models, graphs and tables to draw conclusions and make predictions.
Science of Flight	OH	MA.5.5.C.5	Modify initial conclusions, propose and justify new interpretations and predictions as additional data are collected.
Science of Flight	OH	MA.5.5.E.4	Determine appropriate data to be collected to answer questions posed by students or teacher, collect and display data, and clearly communicate findings.
Integrating with Aeronautics	OH	MA.5.1.I.13	Estimate the results of computations involving whole numbers, fractions and decimals, using a variety of strategies.
Integrating with Aeronautics	OH	MA.5.4.A.1	Justify a general rule for a pattern or a function by using physical materials, visual representations, words, tables or graphs.

Integrating with Aeronautics	OH	MA.5.4.A.2	Use calculators or computers to develop patterns, and generalize them using tables and graphs.
Integrating with Aeronautics	OH	MA.5.4.B.3	Use variables as unknown quantities in general rules when describing patterns and other relationships.
Integrating with Aeronautics	OH	MA.5.4.C.4	Create and interpret the meaning of equations and inequalities representing problem situations.
Integrating with Aeronautics	OH	MA.5.4.E.3	Use variables as unknown quantities in general rules when describing patterns and other relationships.
Integrating with Aeronautics	OH	MA.5.4.G.3	Use variables as unknown quantities in general rules when describing patterns and other relationships.
Integrating with Aeronautics	OH	MA.5.5.B	Interpret data by looking for patterns and relationships, draw and justify conclusions, and answer related questions.
Integrating with Aeronautics	OH	MA.5.5.C.5	Modify initial conclusions, propose and justify new interpretations and predictions as additional data are collected.
Integrating with Aeronautics	OH	MA.5.5.G	Evaluate conjectures and predictions based upon data presented in tables and graphs, and identify misuses of statistical data and displays.
Intro to Aeronautics (109-123)	OH	MA.5.5.A.1	Read, construct and interpret frequency tables, circle graphs and line graphs.
Intro to Aeronautics (109-123)	OH	MA.5.5.B	Interpret data by looking for patterns and relationships, draw and justify conclusions, and answer related questions.
Scientific Method(124-144)	OH	MA.5.4.F.5	Model problems with physical materials and visual representations, and use models, graphs and tables to draw conclusions and make predictions.
Scientific Method(124-144)	OH	MA.5.5.E.4	Determine appropriate data to be collected to answer questions posed by students or teacher, collect and display data, and clearly communicate findings.
Exploring Aeronautics			
2003 Mathematics			
Academic Content Standards			
Ohio Mathematics			
Grade 6			
Activity/Lesson	**State**	**Standards**	
Fundamentals of Aeronautics (145-176)	OH	MA.6.5.A.1	Read, construct and interpret line graphs, circle graphs and histograms.
Fundamentals of Aeronautics (145-176)	OH	MA.6.5.C	Evaluate interpretations and conclusions as additional data are collected, modify conclusions and predictions, and justify new findings.

Fundamentals of Aeronautics (145-176)	OH	MA.6.5.E.2	Select, create and use graphical representations that are appropriate for the type of data collected.
Airplane Control(209-256)	OH	MA.6.2.A	Select appropriate units to measure angles, circumference, surface area, mass and volume, using:
Airplane Control(209-256)	OH	MA.6.3.A	Identify and label angle parts and the regions defined within the plane where the angle resides.
The Resource Center	OH	MA.6.1.A	Represent and compare numbers less than 0 through familiar applications and extending the number line.
Science of Flight	OH	MA.6.5.C	Evaluate interpretations and conclusions as additional data are collected, modify conclusions and predictions, and justify new findings.
Science of Flight	OH	MA.6.5.E.2	Select, create and use graphical representations that are appropriate for the type of data collected.
Integrating with Aeronautics	OH	MA.6.1.A	Represent and compare numbers less than 0 through familiar applications and extending the number line.
Integrating with Aeronautics	OH	MA.6.1.B	Compare, order and convert among fractions, decimals and percents.
Integrating with Aeronautics	OH	MA.6.1.C.5	Use models and pictures to relate concepts of ratio, proportion and percent, including percents less than 1 and greater than 100.
Integrating with Aeronautics	OH	MA.6.5.A.1	Read, construct and interpret line graphs, circle graphs and histograms.
Integrating with Aeronautics	OH	MA.6.5.C	Evaluate interpretations and conclusions as additional data are collected, modify conclusions and predictions, and justify new findings.
Integrating with Aeronautics	OH	MA.6.6.E	Use deductive thinking to construct informal arguments to support reasoning and to justify solutions to problems.
Integrating with Aeronautics	OH	MA.6.6.F	Use inductive thinking to generalize a pattern of observations for particular cases, make conjectures, and provide supporting arguments for conjectures.
Intro to Aeronautics (109-123)	OH	MA.6.5.A.1	Read, construct and interpret line graphs, circle graphs and histograms.
Intro to Aeronautics (109-123)	OH	MA.6.5.B.5	Describe the frequency distribution of a set of data, as shown in a histogram or frequency table, by general appearance or shape; e.g., number of modes, middle of data, level of symmetry, outliers.
Intro to Aeronautics (109-123)	OH	MA.6.5.C	Evaluate interpretations and conclusions as additional data are collected, modify conclusions and predictions, and justify new findings.

Intro to Aeronautics (109-123)	OH	MA.6.5.E.2	Select, create and use graphical representations that are appropriate for the type of data collected.
Scientific Method(124-144)	OH	MA.6.5.A.1	Read, construct and interpret line graphs, circle graphs and histograms.
Scientific Method(124-144)	OH	MA.6.5.B.5	Describe the frequency distribution of a set of data, as shown in a histogram or frequency table, by general appearance or shape; e.g., number of modes, middle of data, level of symmetry, outliers.
Scientific Method(124-144)	OH	MA.6.5.C	Evaluate interpretations and conclusions as additional data are collected, modify conclusions and predictions, and justify new findings.
Exploring Aeronautics			
2003 Mathematics			
Academic Content Standards			
Ohio Mathematics			
Grade 7			
Activity/Lesson	**State**	**Standards**	
Fundamentals of Aeronautics (145-176)	OH	MA.7.3.A	Identify and label angle parts and the regions defined within the plane where the angle resides.
Fundamentals of Aeronautics (145-176)	OH	MA.7.4.B.1	Represent and analyze patterns, rules and functions with words, tables, graphs and simple variable expressions.
Fundamentals of Aeronautics (145-176)	OH	MA.7.4.G.1	Represent and analyze patterns, rules and functions with words, tables, graphs and simple variable expressions.
Wings(177-208)	OH	MA.7.2.F.9	Describe what happens to the surface area and volume of a three-dimensional object when the measurements of the object are changed; e.g., length of sides are doubled.
Airplane Control(209-256)	OH	MA.7.3.A	Identify and label angle parts and the regions defined within the plane where the angle resides.
Tools of Aeronautics(257-326)	OH	MA.7.2.E.4	Solve problems involving proportional relationships and scale factors; e.g., scale models that require unit conversions within the same measurement system.
Tools of Aeronautics(257-326)	OH	MA.7.4.M.11	Use graphing calculators or computers to analyze change; e.g., distance-time relationships.
The Tools of Aeronautics	OH	MA.7.2.E.4	Solve problems involving proportional relationships and scale factors; e.g., scale models that require unit conversions within the same measurement system.
The Tools of Aeronautics	OH	MA.7.4.M.11	Use graphing calculators or computers to analyze change; e.g., distance-time relationships.

The Resource Center	OH	MA.7.1.A	Represent and compare numbers less than 0 through familiar applications and extending the number line.
Science of Flight	OH	MA.7.4.M.11	Use graphing calculators or computers to analyze change; e.g., distance-time relationships.
Science of Flight	OH	MA.7.5.C	Evaluate interpretations and conclusions as additional data are collected, modify conclusions and predictions, and justify new findings.
Integrating with Aeronautics	OH	MA.7.4.D.9	Recognize a variety of uses for variables; e.g., placeholder for an unknown quantity in an equation, generalization for a pattern, formula.
Integrating with Aeronautics	OH	MA.7.4.G.1	Represent and analyze patterns, rules and functions with words, tables, graphs and simple variable expressions.
Integrating with Aeronautics	OH	MA.7.5.C	Evaluate interpretations and conclusions as additional data are collected, modify conclusions and predictions, and justify new findings.
Intro to Aeronautics (109-123)	OH	MA.7.5.C	Evaluate interpretations and conclusions as additional data are collected, modify conclusions and predictions, and justify new findings.
Intro to Aeronautics (109-123)	OH	MA.7.5.G.2	Analyze how decisions about graphing affect the graphical representation; e.g., scale, size of classes in a histogram, number of categories in a circle graph.
Scientific Method(124-144)	OH	MA.7.5.B.4	Construct opposing arguments based on analysis of the same data, using different graphical representations.
Scientific Method(124-144)	OH	MA.7.5.C	Evaluate interpretations and conclusions as additional data are collected, modify conclusions and predictions, and justify new findings.
Scientific Method(124-144)	OH	MA.7.5.E.2	Analyze how decisions about graphing affect the graphical representation; e.g., scale, size of classes in a histogram, number of categories in a circle graph.
Exploring Aeronautics			
2003 Mathematics			
Academic Content Standards			
Ohio Mathematics			
Grade 8			
Activity/Lesson	**State**	**Standards**	
Fundamentals of Aeronautics (145-176)	OH	MA.8.2.A.6	Solve and determine the reasonableness of the results for problems involving rates and derived measurements, such as velocity and density, using formulas, models and graphs.
Fundamentals of Aeronautics (145-176)	OH	MA.8.2.E.8	Find the sum of the interior and exterior angles of regular convex polygons with and without measuring the angles with a protractor.

Fundamentals of Aeronautics (145-176)	OH	MA.8.3.C.2	Recognize the angles formed and the relationship between the angles when two lines intersect and when parallel lines are cut by a transversal.
Fundamentals of Aeronautics (145-176)	OH	MA.8.5.A.1	Use, create and interpret scatterplots and other types of graphs as appropriate.
Fundamentals of Aeronautics (145-176)	OH	MA.8.5.B.2	Evaluate different graphical representations of the same data to determine which is the most appropriate representation for an identified purpose; e.g., line graph for change over time, circle graph for part-to-whole comparison, scatterplot for relationship between two variants.
Fundamentals of Aeronautics (145-176)	OH	MA.8.5.B.3	Differentiate between discrete and continuous data and appropriate ways to represent each.
Fundamentals of Aeronautics (145-176)	OH	MA.8.5.F.9	Construct convincing arguments based on analysis of data and interpretation of graphs.
Wings(177-208)	OH	MA.8.2.A.6	Solve and determine the reasonableness of the results for problems involving rates and derived measurements, such as velocity and density, using formulas, models and graphs.
Wings(177-208)	OH	MA.8.2.C.9	Demonstrate understanding of the concepts of perimeter, circumference and area by using established formulas for triangles, quadrilaterals, and circles to determine the surface area and volume of prisms, pyramids, cylinders, spheres and cones. (Note: Only volume should be calculated for spheres and cones.)
Wings(177-208)	OH	MA.8.2.E.10	Use conventional formulas to find the surface area and volume of prisms, pyramids and cylinders and the volume of spheres and cones to a specified level of precision.
Wings(177-208)	OH	MA.8.2.F.6	Solve and determine the reasonableness of the results for problems involving rates and derived measurements, such as velocity and density, using formulas, models and graphs.
Integrating with Aeronautics	OH	MA.8.1.G.6	Estimate, compute and solve problems involving rational numbers, including ratio, proportion and percent, and judge the reasonableness of solutions.
Integrating with Aeronautics	OH	MA.8.5.F.9	Construct convincing arguments based on analysis of data and interpretation of graphs.
Integrating with Aeronautics	OH	MA.8.6.D	Apply reasoning processes and skills to construct logical verifications or counter-examples to test conjectures and to justify and defend algorithms and solutions.
Intro to Aeronautics (109-123)	OH	MA.8.5.F.9	Construct convincing arguments based on analysis of data and interpretation of graphs.

Scientific Method(124-144)	OH	MA.8.5.A.1	Use, create and interpret scatterplots and other types of graphs as appropriate.
Scientific Method(124-144)	OH	MA.8.5.B.2	Evaluate different graphical representations of the same data to determine which is the most appropriate representation for an identified purpose; e.g., line graph for change over time, circle graph for part-to-whole comparison, scatterplot for relationship between two variants.
Scientific Method(124-144)	OH	MA.8.5.B.3	Differentiate between discrete and continuous data and appropriate ways to represent each.
Scientific Method(124-144)	OH	MA.8.5.F.9	Construct convincing arguments based on analysis of data and interpretation of graphs.